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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/926,592	09/04/1997	SHUNPEI YAMAZAKI	0756-1717	7227

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NIXON PEABODY LLP
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EXAMINER

PERT, EVAN T

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	08/926,592	YAMAZAKI, SHUNPEI	
	Examiner	Art Unit	
	Evan Pert	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13,16,17,20-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13,16,17 and 20-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 16, 17, 20, 21, 23, 24, 25, 26, 28, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takasaki et al. (US 4,363,868) in view of Sherman (US 4,563,367).

In Fig. 2, Takasaki et al. depicts a plasma CVD chamber used for depositing different insulating films such as layers of silicon nitride and silicon oxynitride [Summary of Invention].

The apparatus in Fig. 2 is the kind of "conventional semiconductor-processing vacuum chamber" that Sherman discloses in the abstract, but not having the special apparatus 30 for better cleaning with nitrogen fluoride. Sherman's example of a prior art plasma CVD does not have gas going into the upper (i.e. second) electrode [Fig. 2], but this other kind of chamber with a so-called gas electrode showerhead was certainly known as evidenced by Takasaki et al..

Takasaki et al. does not disclose "removing the substrate" after forming the films, introducing cleaning gas through the second electrode 22, and exciting the cleaning gas to remove chamber surface depositions.

Sherman teaches that plasma deposition chambers for silicon oxides and nitrides can be advantageously cleaned by nitrogen fluoride gas with plasma excitation [col. 1, lines 12-15 with col. 5], and since chamber deposits are etched away during the cleaning, of the same material as was deposited on the device, one of ordinary skill would be motivated to remove the substrate being processed so the chamber can be cleaned without damaging the semiconductor wafer being processed.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to adopt NF₃ plasma excitation, for etching the chamber of oxides and nitrides, as taught by Sherman, in the apparatus of Takasaki. One of ordinary skill in the art would have been motivated to introduce cleaning gas (i.e. NF₃) into the chamber and excite it for the purpose of cleaning the chamber to avoid contamination in later processing. In adopting the NF₃ cleaning, one of ordinary skill would have no choice but to introduce gas into the 2nd electrode with plurality of openings, because this is the only place the gas could be introduced.

2. Claims 22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takasaki et al. in view of Sherman, as applied to claims 21 and 26 above, and further in view of Tanaka et al. (US 4,525,381).

Takasaki et al. and Sherman are silent about photo CVD. According to Tanaka et al., using photo CVD, a vapor deposited film "can be formed with high efficiency" [abstract] and results in a "uniform film" over a "large area of a substrate" [col. 1, lines 17-22].

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to adopt photo CVD for its advantages taught by Tanaka et al.. One of ordinary skill would have been motivated to use photo CVD for a uniform film over a large area of substrate, for example.

Response to Arguments

3. Applicant's arguments with respect to claims 13, 16-17 and 20-30 have been considered but are moot in view of the new grounds of rejection.
4. Applicant's arguments regarding "preparing" electrodes as compared to "providing" electrodes have been fully considered but they are misleading and inaccurate. Applicant recites the plain meaning of the dictionary for each of the words, to say they are different for claim scope. However, in the context of the disclosure, and in harmony with the dictionary definitions recited by applicant, the "preparing" can not happen without "providing." Per applicant, the act of "providing" comprises acts of "making", "supplying" and "furnishing," but these are *inherently* acts of "preparing." If the act of "providing" can somehow not include some kind of "preparing," the whole invention doesn't make sense because without any "preparation" at all, the invention would be inoperative. Alternatively, when electrodes aren't "prepared," they certainly aren't "provided" because "providing" is an act of "preparation." If the electrodes aren't "prepared" in some way, they simply won't be able to work as electrodes. The specification doesn't even use the word "preparing" to distinguish from acts of "providing." The examiner wonders how the two interrelated acts of "preparing" and "providing" can be separated in scope, with the specification silent on "preparing."

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan Pert whose telephone number is 703-306-5689. The examiner can normally be reached on M-F (7:30AM-3:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 703-308-1233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ETP
February 9, 2004


EVAN PERT
PRIMARY EXAMINER